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Total Number of Pages in This Submission	

Application Number	09/730,011
Filing Date	12/5/2000
First Named Inventor	Cox
Art Unit	2655
Examiner Name	Michael N. Opsasnick
Attorney Docket Number	1999-0767A

ENCLOSURES *(Check all that apply)*

- [✓] Fee Transmittal Form
- [✓] Fee Attached
- [✓] Amendment/Reply Triplicate
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation
- [ ] Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
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  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [✓] Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- [ ] Proprietary Information
- [ ] Status Letter
- [✓] Other Enclosure(s) (please Identify below):
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Wendy W. Koba, Esq.
Signature	Wendy W. Koba
Printed name	Wendy W. Koba
Date	2/27/2006
Reg. No.	30509

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Patent Application for:

Applicants: Richard Vandervoort Cox

Atty. No: 1999-0767A

Title: Frame Erasure Concealment Technique for a Bitstream-Based Feature Extractor

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2006

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 500.00

Complete if Known	
Application Number	09/730,011
Filing Date	12/5/2000
First Named Inventor	Cox
Examiner Name	Michael N. Opsasnick
Art Unit	2655
Attorney Docket No.	1999-0767A

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1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 20 or HP =	_____	x _____	= _____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 3 or HP =	_____	x _____	= _____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	Fee Paid ($)
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
_____ - 100 =	_____ / 50 =	_____ (round up to a whole number) x	_____	= _____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge): Brief on Appeal	500.00

SUBMITTED BY

Signature	Wendy W. Koba	Registration No. (Attorney/Agent) 30509	Telephone 619-346-7112
Name (Print/Type)	Wendy W. Koba		Date 2/27/2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Inventor(s)	Richard Vandervoort Cox
Case	1999-0767A **Conf. No.** 6590
Serial No.	09/730,011 **Group Art Unit** 2655
Filing Date	December 5, 2000
Examiner	Michael N. Opsasnick
Title	**Frame Erasure Concealment Technique for a Bitstream-Based Feature Extractor**

COMMISSIONER FOR PATENTS
ALEXANDRIA, VA 22313-1450

SIR:

BRIEF ON APPEAL

I. INTRODUCTION

Appellant submits the foregoing Appeal Brief in support of a Notice of Appeal dated December 28, 2005, upon receipt of a Final Office Action from the Examiner dated November 1, 2005 affirming the final rejection of claims 2, 4 and 5.

II. REAL PARTY IN INTEREST

AT&T Corp. is the real party in interest by virtue of an Assignment recorded in the United States Patent and Trademark Office on December 5, 2000.

III. RELATED APPEALS AND INTERFERENCES

This is the first appeal in the above-identified application.

IV. STATUS OF CLAIMS

Claims 2, 4 and 5 are pending in this application and all stand rejected.

V. STATUS OF AMENDMENTS

Appellant's last amendment to the pending claims was filed on July 12, 2004, where these amendments were entered and are of record.

VI. SUMMARY OF CLAIMED SUBJECT MATTER

Appellant's invention, as discussed in the specification at paragraphs **[0009]** and **[0010]**, relates to "a frame erasure concealment technique for use with a bitstream-based feature extraction process in wireless communication applications....An error in a frame is declared if the Euclidean distance between the line spectrum pair (LSP) coefficients in adjacent frames is less than or equal to a predefined threshold T. In such a case, one of the frames is then simply deleted from the bitstream. In particular, and based on the missing feature theory, a decoding algorithm is reformulated for the hidden Markov model (HMM) when a frame erasure is detected".

Independent claim 2 defines "a method of generating speech coding parameters of an erased frame in a bitstream-based front end of a speech recognition system, the method comprising the steps of ... defining a steady-state threshold T associated with an acceptable different between the LSPs of the adjacent frames; deleting the LSPs of the n^{th} frame in an observation sequence if the measured distance is less than or equal to T; and generating the speech coding parameters with a standard hidden Markov model process".

VII. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following is a concise statement of each ground of rejection presented for review:

- Claim 2 was rejected under 35 USC § 103(a) as being unpatentable over US Patent 6,044,343 in view of US Patents 5,704,004 and 5,826,221.

- Claims 4 and 5 were rejected under 35 USC § 103(a) as being unpatentable over US Patent 6,044,343 in view of US Patents 5,704,004 and 5,826,221, in further view of US Patent 6,230,124.

VIII. ARGUMENT

A. 35 USC § 103(a) Rejection - Claim 2

In the Office action dated November 1, 2005, the Examiner issued a Final rejection of pending claim 2 under 35 USC 103(a) as being unpatentable over the combination of U.S. Patent 6,044,343 (Cong et al.), in view of US Patent 5,704,004 (Li et al.) and U.S. Patent 5,826,221 (Aoyagi).

In the Examiner's *Response to Arguments*, the Examiner stated that "the Aoyagi reference is used to teach the limitation of using adjacent frames to perform the distance measurement", where in the specific rejection the Examiner cited Aoyagi as teaching "a method for defining a threshold based upon the difference in ISP parameters in adjacent subframes" (citing column 4, lines 25-50 of Aoyagi). The Examiner concluded that "it would have been obvious to one of ordinary skill in the art of speech processing to modify the teachings of the combination of [Cong] in view of [Li] with using an adjacent frames to cure frame error because it would advantageously generate a more accurate representation of speech [citing Aoyagi].

Appellant cannot agree with the Examiner's conclusion. The cited Aoyagi reference, as described at column 3, beginning at line 41 and column 4, beginning at 25, is related to:

> [C]oding circuit [that] adaptively selects either a quantized value or an interpolation value as a subframe-by-subframe vocal tract prediction coefficient, depending on the variation of vocal tract information within a frame. Quantized values need coding bits while interpolation values do not need them...The decision block 210 selects one of the modes 1-3 for the current frame, as follows. First, by using the quantized value LspQ4p of the fourth subframe of the previous frame and the quantized value LspQ4 of the fourth subframe of the current frame, the decision block 210 computes LSP coefficient interpolation values LspD1, LspD2 and LspD3 for the first to third subframes of the current frame....If the frame error E1 is smaller than a preselected threshold Et1, the decision block 210 determines that the current frame should be coded in the mode 1...On the other hand, if the frame error E1 is greater than the threshold Et1, then the decision

block 210 computes LSP coefficient interpolation values LspDD1 and Lsp DD3 for the first and third subsframes, respectively, using the quantized values.

There is no teaching in Aoyagi, it is asserted, regarding a calculation of a "distance" between LSP values, as required by independent claim 2. Aoyagi utilizes the fourth sub-frame LSP values to interpolate the intermediate subframe values. Additionally, the "threshold" of Aoyagi is merely a "preselected" value. In contrast, the threshold utilized in the method of the present invention is based upon an "acceptable difference between the LSPs of the adjacent frames" (as related to determining if a steady-state condition exists).

Additionally, the Li et al. reference cited by the Examiner is considered to be associated with non-analogous subject matter of linear predictive coding (LPC) coefficients, where LPC requires compression (and hence, erasure) on the transmission side. While Cong et al. does disclose the use of a Euclidean distance measurement, this technique is used to determine a "match" between a current value and stored representations.

Without any teaching regarding the creation of a threshold based on "an acceptable different between the LSPs of the adjacent frames", appellants assert that the combination of Aoyagi with Li et al. and Cong et al. cannot be found to render obvious the subject matter of independent claim 2. Appellant therefore respectfully requests the Board of Appeals to reconsider these arguments, reverse the Examiner's rejection and find claim 2 to be in condition for allowance.

B. 35 USC § 103(a) Rejection - Claims 4 and 5

The Examiner issued a Final rejection of claims 4 and 5 under 35 USC 103(a) as being unpatentable over the above-cited combination of references, in further view of US Patent 6,230,124 (Maeda). In particular, the Examiner further cited Maeda as teaching an error checking methodology using the "most important bits". However, without the teaching of the threshold determination as defined by claim 2, appellant believes that claims 4 and 5 are also allowable over the combination of all cited references.

Appellant thus respectfully requests the Board of Appeals to reconsider this rejection, reverse the Examiner's decision, and find claims 4 and 5 to be in condition for allowance over this combination of references.

IX. CONCLUSION

For the reasons expressed above, the Examiner's rejections of claims 2, 4 and 5 under 35 USC § 103(a) are considered to lack merit and thus mandate reversal. Appellant solicits such action from the Board of Appeals at this time.

Respectfully submitted,

Richard Vandervoort Cox

By: Wendy W. Koba

Wendy W. Koba
Reg. No. 30509
Attorney for appellant
610-346-7112

Date: 2/27/2004

CLAIMS APPENDIX

1. ***cancelled***

2. *(previously presented)* A method of generating speech coding parameters of an erased frame in a bitstream-based front end of a speech recognition system, the method comprising the steps of:

detecting an erased frame;

measuring the Euclidean distance between the line spectrum pairs (LSPs) of adjacent frames (n-1) and n;

defining a steady-state threshold T associated with an acceptable difference between the LSPs of the adjacent frames;

deleting the LSPs of the n^{th} frame in an observation sequence if the measured distance is less than or equal to T; and

generating the speech coding parameters with a standard hidden Markov model process.

3. ***cancelled***

4. *(previously presented)* The method as defined in claim 2 wherein in detecting a frame erasure, an erasure is declared when the bits most sensitive to error within a frame are determined to be in error.

5. *(original)* The method as defined in claim 4 wherein the bits most sensitive to error in a frame in a bitstream-based speech recognition system including the line spectrum pair information bits and the gain information bits.